SITE ASSESSMENT REPORT
FOR
THE MASTER METALS INC. SITE
CLEVELAND, CUYAHOGA COUNTY, OHIO

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1.0 INTRODUCTION

The Ecology & Environment, Inc., Technical Assistance Team (TAT) was tasked by the United States Environmental Protection Agency (U.S. EPA) to conduct a site assessment at the Master Metals Inc. site located in Cleveland, Cuyahoga County, Ohio, under Technical Directive Document (TDD) T05-9304-014, issued on April 16, 1993. The tasks to be completed under this TDD included an extent of contamination study, air monitoring, documentation of site activities, photodocumentation, collect off-site soil samples, evaluation of the threat to human health and the environment, preparation of a sampling plan and a health & safety plan. On July 14, 1993, at the request of U.S. EPA On-Scene Coordinator (OSC) Joseph Fredle, TAT conducted off-site sampling at the Master Metals Inc. site.

2.0 SITE BACKGROUND

2.1 Site Description

The Master Metals, Inc. (MMI) site is located at 2850 West Third Street, Cleveland, Cuyahoga County, Ohio. The site consists of two contiguous parcels of land totaling approximately 4.3 acres (Figure 1). The property is roughly right triangle-shaped. The site is bounded on the northwest by rail yards owned by the Baltimore and Ohio Railroad, on the south by a dead end road, and on the east by West Third Street. The site is located in a heavily industrialized area. LTV Steel owns the property to the north and south of the site. A baseball field is located approximately 2,000 feet west of the site and was selected as area #1 for off-site soil sample location. A residential area, the Valleyview Apartments, is located on West 5th Street approximately 1,500 feet northwest of the site and was selected as area #2 for off-site soil sample location. The Cuyahoga River is located approximately 1,400 feet northeast of the site (Figure 2).

2.2 Site Geology

The MMI site is located within the lake plains section of the glaciated central lowland physiographic province, a region characterized by a gentle northward sloping topography towards Lake Erie dominated by surficial deposits and landform produced by ancient lacustrine processes. The site lies within the confines of a steep-walled bedrock valley that dissects the regional lake plain topography.

The general geologic setting of the site area consists of unconsolidated Pleistocene glacial till deposits overlying shale bedrock. The surficial bedrock consists predominantly of thick Paleozoic shale and sandstones that range in age from late

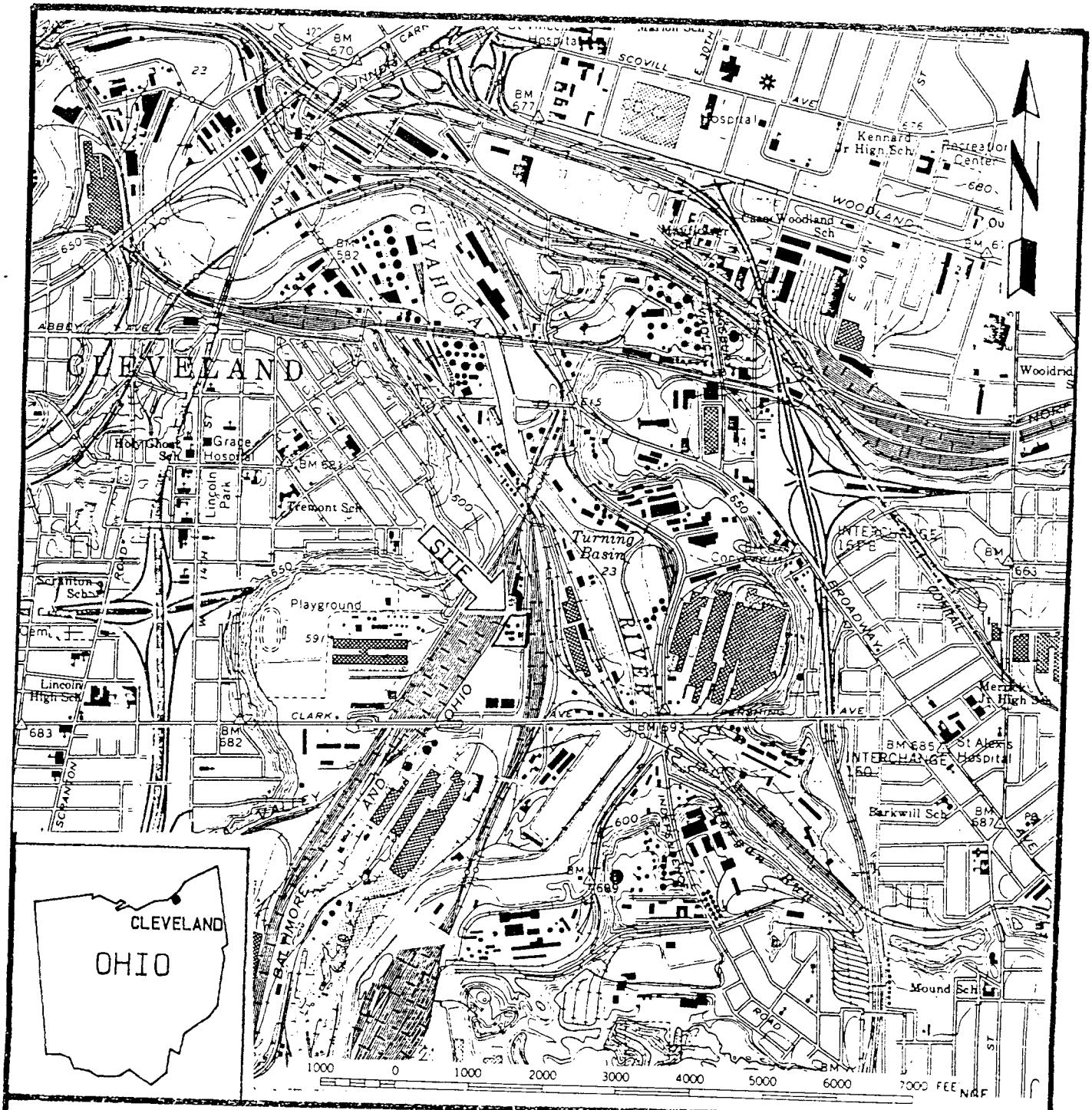

FIGURE 1
SITE LOCATION MAP
MASTER METALS INC.
CLEVELAND, OHIO

Source: USGS Cleveland South Quad.
1963 Photorevised 1984
7.5 Minute Series

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DRAWN BY N. Uddin	DATE 07/16/92	PAN# E0H0969SBA
APPROVED BY A. Busher	DATE 04/30/93	TDD # T05-9304-014

Devonian to early Pennsylvanian. The aggregate stratigraphic thickness of exposed bedrock is over 500 feet. Glacial and postglacial surficial materials in the site area include tills, lacustrine and fluviatile deposits, alluvium, muck, and land. The glacial deposits are Woodfordian age and mostly less than 40 feet thick.

Locally the site topography suggests that the direction of ground water and surface water flow would be northeast toward the Cuyahoga River located approximately 1,400 feet northeast of the site. Data collected from on-site soil borings indicates that the depth to groundwater is approximately 10 feet below the ground surface in the unconsolidated glacial and fluvial deposits. The underlying shale bedrock is essentially devoid of groundwater.

2.3 Site History

Master Metals, Inc. (MMI) is a secondary lead smelting facility that produces lead alloys from lead-bearing dross, spent industrial batteries, and various other lead scrap materials. In addition, MMI recycles flue dust and captured baghouse emissions from its furnace operation. The plant was constructed by the National Lead Company in 1932. The National Lead Company operated a secondary lead smelter on the property from 1932 until MMI purchased the plant in 1979.

In 1989, the Ohio Environmental Protection Agency (OEPA) issued an order that cited MMI for emitting smoke from one of its furnaces that exceeded the regulatory limit of 10% opacity and for emitting excessive fugitive dust from both furnaces. Thirty one violations were identified when OEPA conducted an additional inspection in August 1991.

In February 1991, a MMI contractor, Compliance Technologies, Inc. (CTI), collected groundwater samples from on-site monitoring wells. The results indicated that concentrations of lead and cadmium exceeded the Ohio Maximum Contaminant Levels (MCL) for inorganic chemicals (lead 0.05 mg/L & cadmium 0.005 mg/L) in public drinking water supplies. CTI also collected subsurface soil samples from the site at a depth of approximately 1 foot. The results of these sample analyses indicated concentrations of 14,070 mg/kg of total lead.

In January 1992, three ambient high-volume (Hi-Vol) air samplers were installed near the MMI site by the Cleveland Division of Air Pollution Control. The Hi-Vol monitors filter a 24-hour sample of ambient air. The sample filter is analyzed in a laboratory for the concentration of lead in the dust collected during that 24-hour period. A quarterly average of 18 micrograms of lead per cubic meter of air was calculated from the laboratory results for January, February, and March 1992. This concentration is well

above the National Ambient Air Quality Standard (NAAQS) of 1.5 micrograms of lead per cubic meter of air for a calendar quarter average.

In July 1992, the TAT conducted a site assessment and collected seven surface soil samples from the site in order to determine whether contaminants are subject to airborne transport off-site. All samples were analyzed for Resource Conservation and Recovery Act (RCRA) Metals and Toxicity Characteristic Leaching Procedure (TCLP) Metals. Sample analyses results showed that TCLP lead is present at concentrations of 1260 mg/kg, more than 200 times the regulatory level (5 mg/L). The highest concentration of total lead in site soil samples is 115,000 mg/kg.

During the site assessment, the TAT observed that a potential exists for the public to come in contact with contaminants at the MMI site. Therefore, the MMI site was determined by the U.S. EPA to be a threat to the environment and the public. These findings were documented in a Site Assessment Report submitted by the TAT to U.S. EPA under TDD #T05-9206-022.

On August 5, 1993, MMI ceased operation of the facility in response to an Order from OEPA Director, Donald R. Schregardus because MMI failed to comply with Order 2a of the October 14, 1992 Findings and Orders issued by OEPA. The MMI facility has failed to maintain zero visible emissions from the various lead emitting operations at the facility. The OEPA evidenced that MMI exceeded the health based limit of NAAQS for lead. The MMI ambient air quality level for the first quarter of 1993 measured 16.1 micrograms of lead per cubic meter. Since the quarterly standard for lead is 1.5 micrograms per cubic meter, this first quarter of 1993 average from the highest-reading monitor exceeded the standard by 973 percent.

As a result of these violations OEPA notified MMI to immediately cease operation of the facility on August 5, 1993. No further operations shall take place at the facility unless MMI installs additional air pollution control measures and can ensure compliance to the satisfaction of OEPA.

On August 6, 1993, Bank One of Akron, Ohio took possession of the facility viewing the OEPA action as being in technical default of MMI's Loan. At this time MMI declared that there are no longer any funds available to conduct remediation work at the site or to operate the business.

3.0 SITE ACTIVITIES

On July 14, 1993, OSC Joe Fredle met TAT members Nazeer Uddin and Karen Spangler at the MMI site to perform off-site soil sampling and photodocumentation.

3.1 Reconnaissance Inspection

During the off-site reconnaissance inspection of the MMI site, air monitoring instruments were not utilized because of the known hazards. The on-site pre-existing data indicated the main hazard to be particulate lead.

The TAT conducted a walk through inspection of the nearest residential area, the Valleyview Apartments, located on West 5th Street approximately 1,500 feet northwest of the MMI site. A small play area is located in the middle of the apartment buildings. The TAT observed children playing in the small play area. A play ground is also located behind the apartment buildings on Houston Ave. and West 4th Street. Photographs of the MMI site are provided in Appendix A.

3.2 Sampling Activities

On July 14, 1993, the TAT members collected 23 surface soil grab samples at the Valleyview Apartments, rail yard and baseball field. All soil samples were collected to assess the presence, extent and potential magnitude of contaminants that might be present due to airborne transport off-site. The 23 off-site soil sample locations were selected by OSC Fredle during the reconnaissance inspection of the site (Figures 3 & 4).

Off-site surface soil samples S1, S2 and S3 were collected from the baseball field located approximately 2,000 feet west of the site. Off-site soil samples S4 and S5 were collected from a grassy area in the rail yard at northwest of the site behind the railroad tracks. Off-site sample S6 was collected in the open field approximately 1,000 feet northwest of the site. Off-site soil samples S7 through S11 were collected at the playground which is located behind the apartment buildings on Houston Ave and West 4th Street. Off-site soil sample S12 was to serve as a field duplicate of S11 to check for sampling and analytical reproducibility. Off-site samples S13 and S14 were collected from a small play area located in the middle of the apartment buildings. Off-site soil samples S15 through S23 were collected around the apartment buildings.

3.3 Sampling Procedures

Surface soil samples S1 through S23 were collected at a depth of approximately 1 to 6 inches using a dedicated disposable plastic scoop for each sample. The samples were then placed into a mixing pan, and mixed until homogeneous. The material was then transferred into labeled sample bottles. Standard U.S. EPA Environmental Response Team decontamination procedures were adhered to during the collection of all samples. The samples

were cooled to approximately 4 ^{0}C, sealed with U.S. EPA custody seals and packaged in accordance with Department of Transportation required procedures.

As directed by OSC Fredle, all soil samples were analyzed using the U.S. EPA Contract Laboratory Program (CLP) for total metals by Chemtech Consulting Group of Englewood, New Jersey. Results for these samples are presented in Attachment B.

4.0 ANALYTICAL RESULTS

The TAT collected 23 surface soil samples which were analyzed for total metals. The sample results were received from Chemtech Consulting Group by the U.S. EPA Central Regional Laboratory (CRL), Chicago, Illinois, within the fourteen days, as requested. The data quality assurance review for 23 soil samples was validated by CRL on August 30, 1993.

The analytical results for surface soil sample S1 indicated the presence of high levels of total lead (1,850 mg/kg). Soil sample S13 revealed the presence of total lead (1,450 mg/kg). Soil sample S6 also indicated the presence of total lead (1,230 mg/kg).

The level of lead contamination present in the soil samples is higher than the recommended removal level of 500 mg/kg established by the U.S. EPA Office of Solid Waste and Emergency Response (OSWER Directive #9355.4-02). Detailed analytical results are presented in Table 1.

5.0 DISCUSSION OF POTENTIAL THREATS

As documented in TAT site assessment report of July 1992, on-site soil samples at the MMI site exceeded the regulatory limits for TCLP lead. The conditions present at the MMI site may constitute a threat to public health and welfare or the environment based upon the considerations as set forth in the National Contingency Plan (NCP), 40 CFR Section 300.415 (b) (2) and may, therefore, justify that a removal action be conducted at this site, include, but are not limited, to the following:

- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

As documented in TAT site assessment report of July 1992, the analysis of on-site soil samples indicated the presence of TCLP lead that exhibits the characteristic of toxicity as defined in the 40 Code of Federal Regulation (40 CFR) 261.24 (b). The soil samples collected from the on-site soil contained TCLP lead at elevated levels of 1,260 mg/L. In addition, the concentration of

TABLE 1 RESULTS OF CHEMICAL ANALYSIS TAT COLLECTED SAMPLES*
TOTAL METALS PRESENTED IN mg/Kg

SOIL SAMPLE LOCATIONS

ANALYTE	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
ALUMINUM	13,700	13,200	12,300	9,280	10,500	9,320	9,980	6,210	11,900	9,870	12,200	10,100
ANTIMONY	8.0 U	8.4 U	8.3 U	8.0 U	8.1 U	7.9 U	9.1 U	8.6 U	8.8 U	8.1 U	9.0 U	9.2 U
ARSENIC	14.4	10.4	87.2	8.3	49.7	13.6	22.5	14.9	12.0	12.6	28.5	31.2
BARIUM	1070	140	144	147	155	109	89.7	76.8	199	133	120	114
BERYLLIUM	1.1 B	0.57 B	0.56 B	1.3	1.3	0.96 B	0.62 B	0.58 B	0.53 B	1.2	1.3	1.0 B
CADMIUM	0.66 U	0.70 U	0.69 U	0.67 U	0.67 U	0.66 U	0.76 U	0.72 U	0.73 U	0.68 U	0.75 U	0.75 U
CALCIUM	38,400	6,870	6,170	25,900	26,500	29,400	5,140	10,400	9,450	10,900	7,760	7,480
CHROMIUM	74.2	23.9	23.8	38.1	30.9	30.0	24.1	18.7	18.8	17.7	24.0	21.2
COBALT	16.7	9.3 B	9.2 B	9.9 B	7.9 B	12.2	9.6 B	8.5 B	9.0 B	9.9 B	9.1 B	11.4 B
COPPER	1,180	60.0	65.1	108	88.3	84.3	52.1	47.5	41.1	57.1	67.2	68.6
IRON	61,200	26,600	28,000	50,600	38,600	32,500	32,400	22,100	23,000	23,800	30,000	34,900
LEAD	1,850	164	148	856	785	1,230	546	563	297	587	426	445
MAGNESIUM	4,300	3,470	3,330	6,830	7,320	8,070	2,670	5,410	4,080	4,020	3,530	3,390
MANGANESE	995	649	684	1,170	1,110	895	969	669	428	512	603	689
MERCURY	0.33	0.33	0.12 U	0.11 U	0.11 U	0.11 U	0.13 U	0.12 U	0.12 U	0.11 U	0.42 U	0.13 U
NICKEL	104	25.4	24.4	31.3	25.3	31.3	21.7	22.4	28.6	27.2	29.2	30.0
POTASSIUM	2,480	1,740	1,810	1,450	1,570	1,680	1,380	1,090 B	1,630	1,580	1,880	1,510
SELENIUM	6.6 U	0.70 U	0.69 U	0.67 U	0.67 U	0.66 U	0.76 U	0.72 U	0.73 U	0.68 U	0.75 U	0.75 U
SILVER	5.2	1.4 U	3.1	2.3	1.3 U	2.4	1.5 U	1.4 U	1.5 U	1.4 U	2.3 U	4.7
SODIUM	1,710	47.6 U	47.2 U	137 B	112 B	124 B	51.8 U	48.7 U	49.6 U	46.0 U	50.9 U	51.2 U
THALLIUM	0.66 U	0.70 U	0.69 U	0.67 U	0.67 U	0.66 U	0.76 U	0.72 U	0.73 U	0.68 U	0.75 U	0.75 U
VANADIUM	30.8	32.0	28.9	29.1	26.2	29.3	36.0	21.5	27.3	23.7	33.9	31.0
ZINC	2,090	230	272	581	525	309	272	240	178	562	260	251

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TABLE 1 CONT.

ANALYTE	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23
ALUMINUM	4,560	6,430	10,100	10,500	11,900	6,780	8,990	11,100	10,200	10,400	10,900
ANTIMONY	10.7 U	8.7 U	8.6 U	8.6 U	8.7 U	15.9	7.8 U	8.7 U	7.9 U	8.4 U	8.7 U
ARSENIC	11.0	8.0	21.9	19.1	24.4	12.4	18.3	16.4	19.4	30.4	23.4
BARIUM	111	162	93.6	121	97.0	78.9	86.0	105	104	149	108
BERYLLIUM	0.64 B	0.83 B	0.96 B	0.92 B	0.88 B	0.78 B	0.89 B	0.74 B	0.74 B	1.2	0.90
CADMIUM	3.6 U	2.3	0.72 U	0.71 U	0.73 U	0.67 U	0.65 U	0.72 U	0.66 U	0.70 U	0.72 U
CALCIUM	16,700	23,300	9,930	14,100	11,000	6,040	3,4300	23,900	23,000	6,630	7,170
CHROMIUM	22.9	23.3	24.9	26.6	25.8	17.8	22.2	33.9	28.4	35.2	33.2
COBALT	3.9 B	6.5 B	11.6 B	10.2 B	11.3 B	10.4	9.0 B	9.2 B	10.0 B	13.7	10.9 B
COPPER	70.4	106	54.2	58.7	56.8	49.9	42.8	87.3	99.3	113	87.4
IRON	12,500	13,400	30,300	29,700	30,300	19,600	24,300	29,300	31,300	42,700	37,500
LEAD	1,450	684	529	541	558	366	258	981	452	716	701
MAGNESIUM	3,220	4,620	4,150	3,840	4,860	2,370	7,700	5,650	4,820	2,710	3,060
MANGANESE	778	900	1,170	979	976	743	631	929	821	1,600	1,130
MERCURY	0.15 U	0.11 U	0.12 U	0.12 U	0.12 U	0.11 U	0.11 U	0.12 U	0.11 U	0.12 U	0.12 U
NICKEL	20.8	19.2	24.6	25.9	24.6	20.8	23.9	27.8	26.3	30.1	29.0
POTASSIUM	728	751 B	1,550	1,610	1,620	930 B	1,350	1,310	1,770	1,220	1,450
SELENIUM	8.9 U	6.5 U	0.72 U	0.71 U	0.73 U	0.67 U	6.5 U	0.72 U	6.6 U	0.70 U	0.72 U
SILVER	1.8 U	1.3 U	3.6	2.7	2.9 U	2.6	1.3 U	3.9	1.3 U	4.4	4.4 U
SODIUM	60.6 U	43.9 U	48.8 U	48.5 B	49.5 U	45.7 U	224 B	49.0 U	44.9 U	47.7 U	49.1 U
THALLIUM	0.89 U	0.65 U	0.72 U	0.71 U	0.73 U	0.67 U	0.65 U	0.72 U	0.66 U	0.70 U	0.72 U
VANADIUM	12.3 B	15.4	35.1	31.8	31.3	18.8	25.1	28.3	31.6	37.5	33.7
ZINC	323	466	303	285	281	196	222	375	643	864	713

NOTE:

U – The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

B – This flag is used when the compound is found in the associated blank as well as in the sample.

* Samples analyzed by Chemtech Consulting Group, Englewood, New Jersey, under Contract Labroratory Program (CLP) in July, 1993.

total lead in on-site soil samples is 115,000 mg/kg.

Because of its proximity to residential and commercial areas, the MMI site poses a threat of lead exposure to the surrounding population and environment. The existence of contaminated soil, groundwater, ambient air, and the potential for migration of hazardous substances off site makes the exposure to the surrounding population and environment likely.

As the site is in the drainage basin of the Cuyahoga River, there is a possibility for lead contamination to reach the river. The Cuyahoga River is extensively used for transportation and recreational purposes. Swimmers and boaters could come into contact with the contaminants of concern. The Cuyahoga River drains into Lake Erie, which is heavily used for recreational boating and fishing. The possibility exists that lead from the MMI site could bioaccumulate in lake fish, posing a threat to humans and animals that could consume the contaminated fish.

- o High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate;

As documented in TAT site assessment report of July 1992, the potential for migration of lead contaminants by airborne dust or via surface run-off exists at the MMI site. In addition, there is evidence that during its operation, MMI exceeded the NAAQS health based limit as set forth in 40 CFR Part 50.12 Sections 109,301 for lead emissions by 973 percent.

Lead is toxic by ingestion and inhalation of dust or fumes, and is considered a cumulative poison. There are no local effects or symptoms for lead poisoning. The early systemic effects of lead poisoning are nonspecific. Lead poisoning can cause kidney, neurological and reproductive damage in adults. Children with excessive exposure are at risk for learning disabilities and neurological and kidney damage.

- o Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

Northeast Ohio has extremely heavy rainstorms in the summer and heavy snow in the winter. The potential for surface run-off from the contaminated areas to the surrounding property exists during heavy precipitation events. There is also a potential for contaminant migration into the groundwater and Cuyahoga River. During dry weather, the likelihood of contaminated dust being transported off-site due to site activities is high.

6.0 SUMMARY

The MMI site is a secondary lead smelting facility that produces

lead alloys from lead-bearing dross, spent industrial batteries, and various other lead scrap materials. In addition, MMI recycles flue dust and captured baghouse emissions from its furnace operation. On August 5, 1993, MMI ceased operation of the facility in response to an Order from OEPA. The OEPA evidenced that MMI exceeded the NAAQS health based limit for lead. The MMI ambient air quality level for the first quarter of 1993 measured 16.1 micrograms of lead per cubic meter. Since the quarterly standard for lead is 1.5 micrograms per cubic meter, this first quarter of 1993 average from the highest-reading monitor exceeded the standard by 973 percent.

On July 14, 1993, the TAT performed off-site soil sampling and collected 23 soil samples at the Valleyview apartments and a nearby baseball field. The analytical results of soil samples indicated lead concentrations up to 1,850 mg/kg.